GLOBALSAT GPS Module

User Manual

Product No : EM-5318

Version 1.0

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Issue Date	APPR	CHECK	PREPARE
2013/06/05	Ray		Mason

Product Description

Product Description

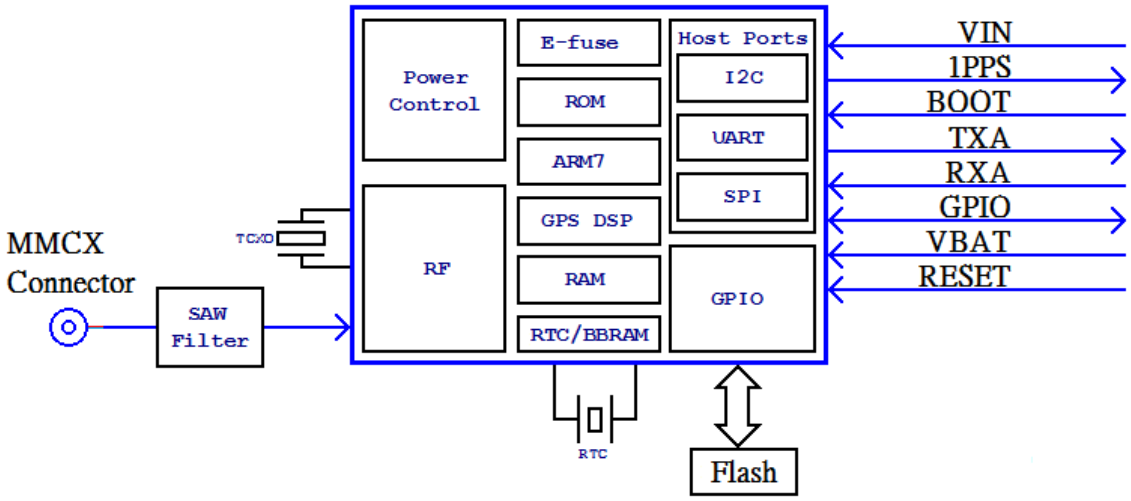
EM-5318 GPS module features high sensitivity, low power and ultra small form factor. This GPS module is powered by SiRF Star IV, it can provide you with superior sensitivity and performance even in urban canyon and dense foliage environment. With SiRF CGEE (Client Generated Extended Ephemeris) technology, it predicts satellite positions for up to 3 days and delivers CGEE-start time of less than 15 seconds under most conditions, without any network assistance. Besides, Micro Power Mode allows GPS module to stay in a hot-start condition nearly continuously while consuming very little power. EM-5318 is suitable for the following applications:

- Automotive navigation
- Personal positioning
- Fleet management
- Mobile phone navigation
- Marine navigation
- Notebook navigation

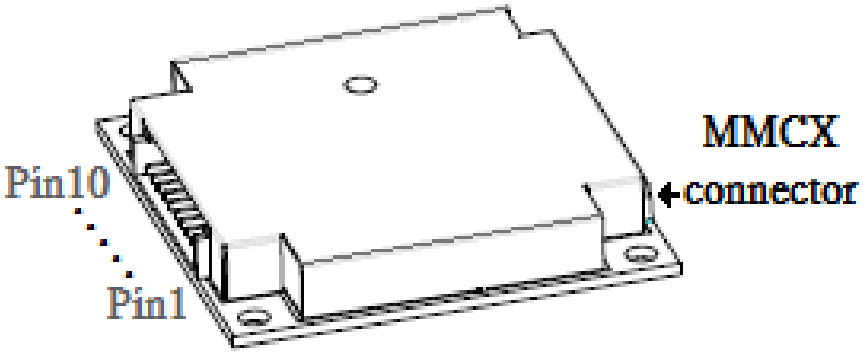
Product Features

- SiRF Star IV high performance GPS Chipset
- Very high sensitivity (Tracking Sensitivity: chipset -163dBm)
- Extremely fast TTFF (Time To First Fix) at low signal level
- Support UART(bidirectional transmission)/I2C(unidirectional transmission) interface(Default UART)
- Build-in MMCX connector for external active antenna.
- Compact size (30.0mm x 30.0mm x 4.8mm) suitable for space-sensitive application
- Support NMEA 0183 V3.0 (GGA, GSA, GSV, RMC**,** VTG, GLL, ZDA)
- Support OSP protocol
- Micro Power Mode(MPM) : Reduce MPM current consumption from <500 uA to < 125 uA
- Support SBAS (WASS, EGNOS, MSAS, GAGAN, QZSS)

Product Block Diagram



Product Pin Description



PIN Number(s)	Name	Type	Description	Note
1	VCC	P	This is the main power supply to the engine board. (3.3Vdc to 5.5Vdc)	
2	GND	P	Ground	
3	TIMEPULSE	O	This pin provides one pulse-per-second output from the board, which is synchronized to GPS time. This is not available in Trickle Power mode. If do not use it, Just NC.	
4	BOOTSEL	I	Set this pin to high for programming flash.	
5	TXD	O	This is the main transmits channel for outputting navigation and measurement data to user's navigation software or user written software. Baud rate based on flash memory	

			setting, Output TTL level referred VCC	
6	RXD	I	This is the main receive channel for receiving software commands to the engine board from SiRFdemo software or from user written software. Baud rate based on flash memory setting.	
7	GPIO	I/O	This GPIO function based on flash memory setting, and voltage level is 1.8V.	
8	VBAT	P	This is the battery backup power input for the SRAM and RTC when main power is off. Without the external backup battery, EM-5318 will always execute a cold star after turning on. To achieve the faster start-up offered by a hot or warm start, a battery backup must be connected. The battery voltage should be between 2.0V and 3.5V.	
9	RESET	I	This pin is input low active. This Module has internal Power on Reset circuit.	
10	NC	O	EM-5318 reserved pin, Just NC.	
	MMCX connector	I	MMCX Connect to external active antenna for receiving GPS signal.	

Electrical Specification

Absolute Maximums Ratings

Parameter	Min.	Typ.	Max.	Conditions	Unit
Power					
Power supply voltage(VCC)	3.3	3.3	5.5		V
Backup battery supply	2.0		3.5		V
Main power supply Current	45	50	55	GPS is not 3D Fixed.	mA
Backup battery supply Current	35	38	45	GPS is 3D Fixed.	uA
MMCX output power		2.8		For external active antenna	V

DC Electrical characteristics

Parameter	Symbol	Min.	Typ.	Max.	Conditions	Units
TXD Output Voltage	V_{TO}			VCC		V
RXD Input Voltage	V_{RI}			3.6		V
High Level Output Current	I_{OH}		2			mA
Low Level Output Current	I_{OL}		2			mA

Receiver Performance

Sensitivity	Chipset Tracking : Chipset Autonomous acquisition :	-163dBm -160 dBm
Time-To-First-Fix[1]	Cold Start – Autonomous	< 35s
		<15s (with CGEE)
	Warm Start – Autonomous[2]	< 35s
		< 15s(with CGEE)
	Hot Start – Autonomous[3]	< 1s
Horizontal Position Accuracy[4]	Autonomous	< 2.5m
Velocity Accuracy[5]	Speed Heading	< 0.01 m/s < 0.01 degrees
Reacquisition	0.1 second, average	
NMEA Update Rate	Output data format based on SPI flash memory setting	
Maximum Altitude	< 18,000 meter	
Maximum Velocity	< 515 meter/ second	

Maximum Acceleration	< 4G

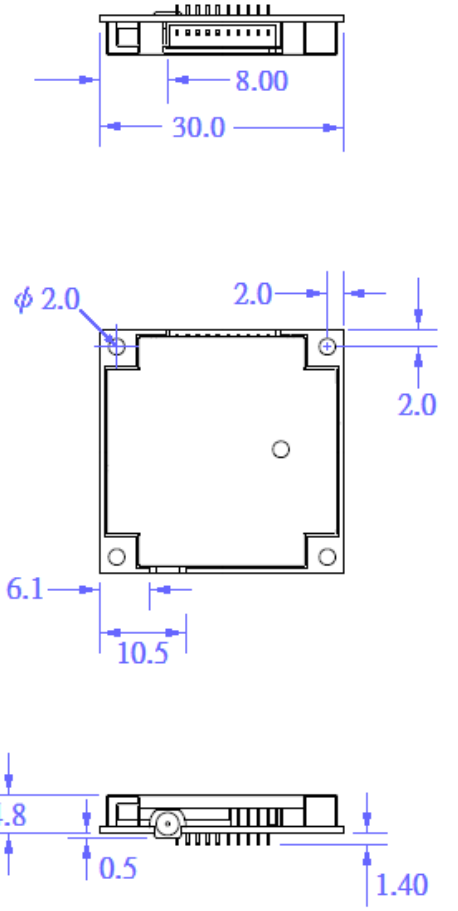
<Note>

1. 50% -130dBm Fu 0.5ppm Tu ±2s Pu 30Km
2. Commanded **Warm START**
3. Commanded **Hot START**
4. 50% 24hr static, -130dBm
5. 50% @ 30m/s

Environmental Characteristics

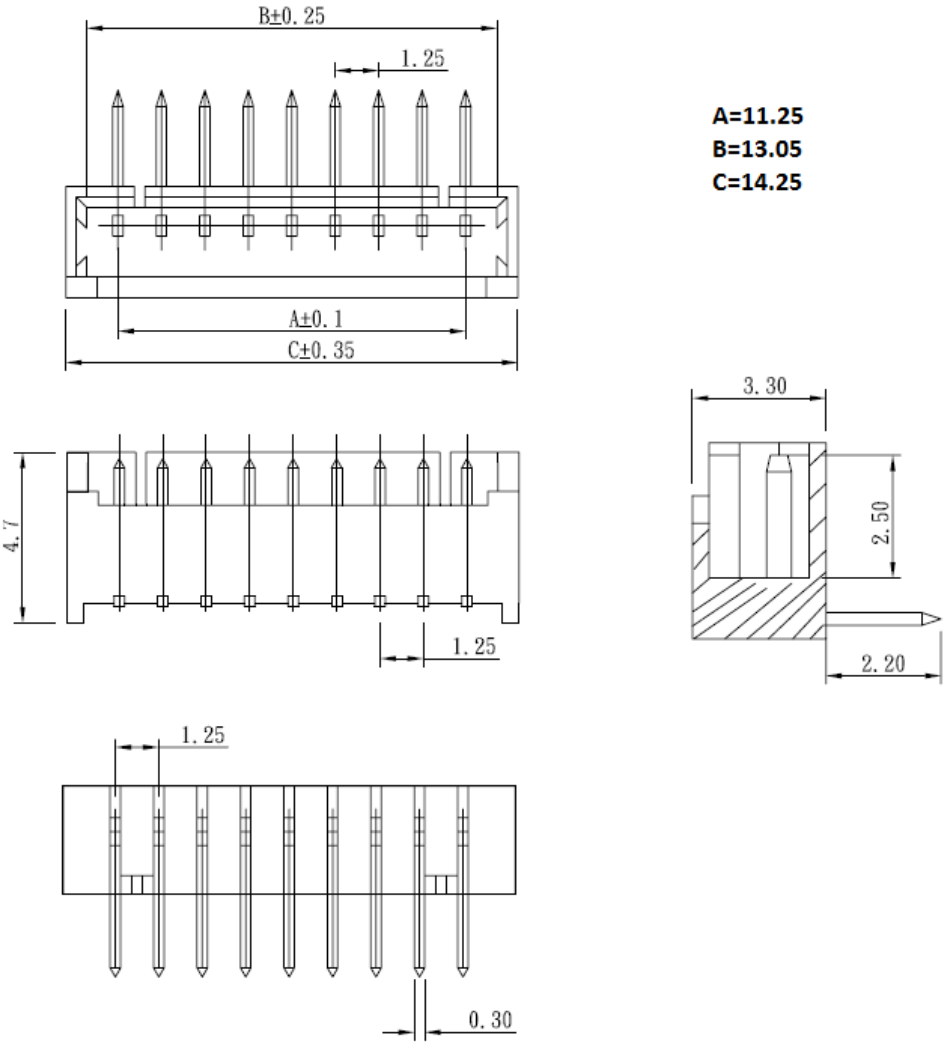
Parameter	Min	Typ	Max	Unit
Humidity Range	5		95	% non-condensing
Operation Temperature	-40	25	85	℃
Storage Temperature	-40		85	℃

Package Dimensions



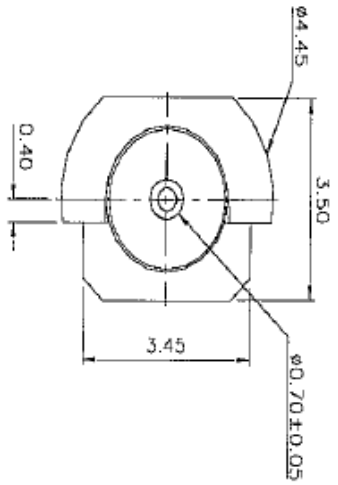
Type	**10-pin holes**
Dimensions	**30.0 mm * 30.0 mm * 4.8 mm ±0.2mm**

Wafer Dimensions(mm)



A=11.25
B=13.05
C=14.25

MMCX connector Dimensions(mm)



Reversion history

Reversion	Date	Name	Status / Comments
V1.0	20130605	Mason	Initial Version